

Inquiry Exercises and Data Collection



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This workbook belongs to:



DOTS Program Agenda

1. Introduction, get to know you conversations
2. Switch-pitch icebreaker outside
3. Memory exercise
4. Introduction to DOTS
5. Inquiry activity: 10 things you didn't notice
6. Split into two groups and go to study sites
7. DOTS data collection with all tools
8. Inquiry activity: 5 inches for 5 minutes
9. Regroup, DOTS data collection discussion
10. Produce a scientific story
11. Submit data to EPA website
12. Conclusion

Further Reading:

Hougham, R. J., Nutter, M., & Graham, C. (2018). Bridging Natural and Digital Domains: Attitudes, Confidence, and Interest in Using Technology to Learn Outdoors. *Journal of Experiential Education*.

Hougham, R.J., Nutter, M., & Graham, C. (2018). Digital Observation Technology Skills (DOTS): Incorporating Modern Digital Technology into Outdoor Experiential Education. *Journal of Connected Science Learning*.

Hougham, R. J. Nutter, M., Gilbertson, M. & Bukouricz, Q. (2017). Student Generated Data Informing Student Generated Inquiries. *Clearing*.

Hougham, R. J., & Kerlin, S. (2016) To Unplug or Plug In: Adopting digital mobile technologies in environmental education. *Green Teacher*.

Smith, K. (2011). *How to be an Explorer of the World*. London, UK: Penguin.



Scientific Story:

Use this space to write (or draw) a short (3-5 sentence) scientific story or poem. In your own words, describe and explain something you observed today using the DOTS equipment and share the story behind it. You can use any of the tools you used to help you tell your story.



Memory Exercise:

How is the environment and nature important to you and/or your community? Write your story below!

Microbiologist Handheld Digital Microscope	Description of findings/photos:	
Media Specialist Digital Camera	Description of photos and events:	
Water Monitor Oakton Meter and LaMotte Test Kit	Water temperature	
	pH	
	Salinity	
	Conductivity	
	Total Dissolved Solids	
	Nitrate	
	Phosphate	
	Dissolved Oxygen	
Ecologist Eyes, ears, hands, brain	Soil Moisture: is it wet, moist, or dry?	
	Describe the surface litter. (bare earth, rocky, vegetated, dead leaves/twigs)	
	Plants: how many different kinds do you see?	___ Grass like ___ Broad leaves ___ Thin, needle-like leaves ___ Fuzzy, waxy, or rough leaves
	Animals: what evidence can you find of animals?	



Data Collection Sheet

Date:

Time:

Team Members:

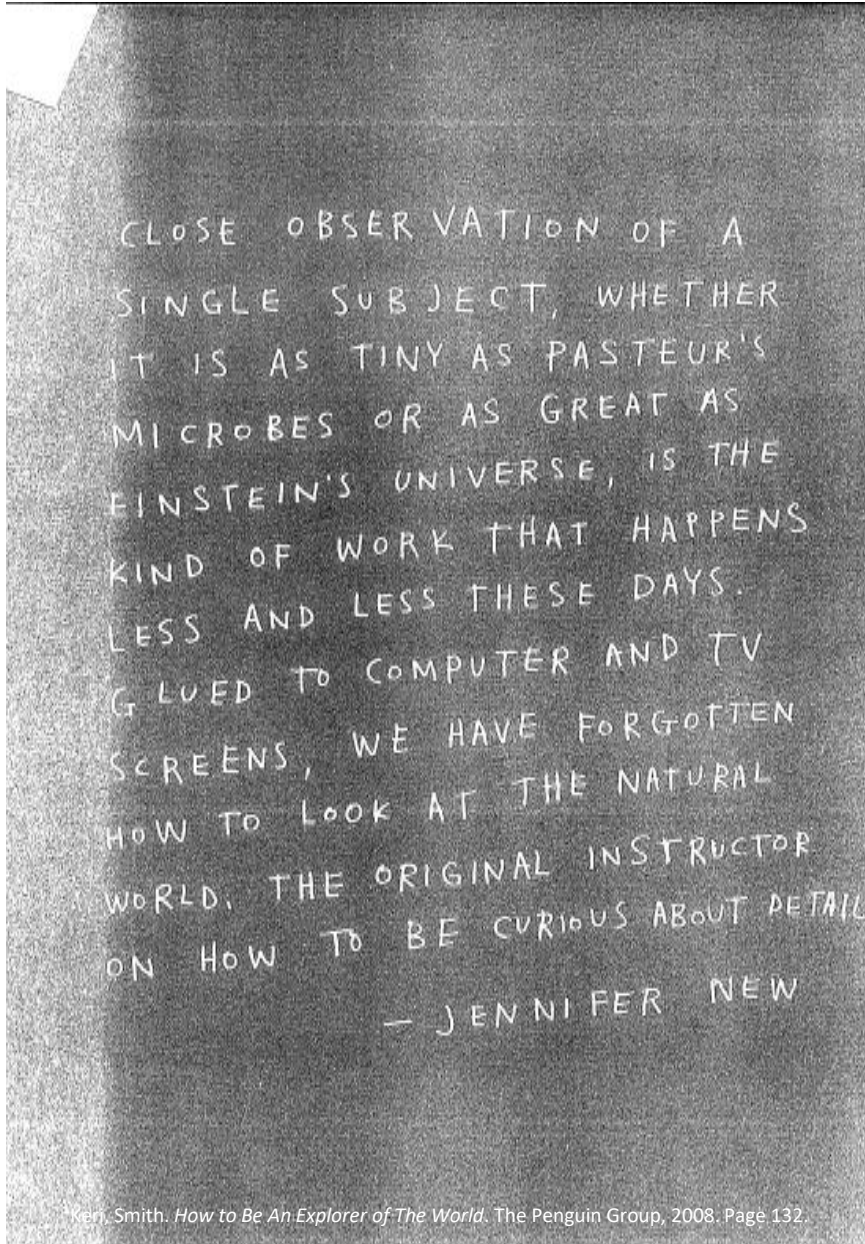
Tool/Role		Data
Navigator GPS Unit	Site Name	
	Time	
	Brief Description of site:	
	Latitude	
	Longitude	
	Elevation	
Meteorologist Kestrel Weather Meter And Lux Meter	Temperature	
	Wind Speed	
	Wind Direction	
	Humidity	
	Approx. Canopy Cover %	
	Approx. Cloud Cover %	
Thermal Investigator and Thermal Imager Thermal Imager and Infrared Thermometer	Hottest Object Temperature	
	Description	
	Coldest Object Temperature	
	Description	



Inquiry Activity: Ten Things You Notice

What ten things do you notice now using careful observation that you did not notice before?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.



Ken Smith. *How to Be An Explorer of The World*. The Penguin Group, 2008. Page 132.

Inquiry Activity: 5 Inches for 5 Minutes

Position yourself five inches away from any natural object, living or non-living. Observe it for five minutes and use this space to record your thoughts, questions, and maybe sketch a picture if you wish. Note your object's texture, color, patterns, and/or relationship to other organisms.